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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,779	10/21/2003	Peter J. Hopper	100-23500 (P05712)	4526

33402 7590 12/17/2004

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EXAMINER

STEIN, STEPHEN J

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/689,779

Applicant(s)

HOPPER ET AL.

Examiner

Stephen J Stein

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 14-16 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-16 and 18-24 is/are allowed.
- 6) ☐ Claim(s) 25-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on November 23, 2004 has been entered.

### *Claim Rejections - 35 USC § 112*

2. Claims 25-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 25-34 recite the limitation "An imager formed in a semiconductor material, the imager comprising: a first region of the semiconductor material, the first region containing a top surface of the semiconductor material, being a first conductivity type, and having a layer that includes silicon germanium; and a second region of the semiconductor material located below the first region, the second region containing the first region and being a second conductivity type. This limitation makes the claims unclear because it is unclear as how the first region of the semiconductor material can contact the top surface of the semiconductor material (e.g. how can something contact the top surface of itself?). Does applicant mean a top surface of the stack?

***Claim Rejections - 35 USC § 102***

3. Claim 25 is rejected under 35 U.S.C. 102(e) as being anticipated by US 6,646,318 (Hopper et al.).

Hopper teaches an imager cell comprising a p-type SiGe layer (layer 214) (first conductivity type semiconductor material having a layer which includes silicon germanium) and a second region which is located below and contacts the p-type SiGe layer and which is comprised of an n-type (second conductivity type) SiGe (layer 212). (See Figure 3 and col. 7, lines 38-42 and col. 7, lines 30-31).

***Response to Arguments***

4. Applicants have filed an RCE after allowance and have added new claims 25-34 which are of different scope than the previously allowed claims. Applicants in their accompanying remarks argue that the Hopper reference (US 6,646,318) fails to teach the claimed invention because the n<sup>+</sup> region (242) of figure 2 fails to teach the SiGe layer required by claim 25. This argument has been considered, but not deemed persuasive. The first region can be other than region 242 and in the instant case can be interpreted to be region 212 in the prior art reference. The first region is only claimed relative to the top surface of the semiconductor material and not to the top surface of the stack of layers or of the device.

***Allowable Subject Matter***

5. Claims 14-16 and 18-24 are allowed over the prior art.
6. Claims 26-34 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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7. The following is a statement of reasons for the indication of allowable subject matter:
8. Claims 14-16 and 18-24 are allowed for reasons already of record.
9. New claims 26-34 are allowable because while the prior art teaches an imager cell comprising region comprising p-type SiGe layer (first conductivity type semiconductor material having a layer which includes silicon germanium) and a second region which is located below and contacts the p-type SiGe layer and which is comprised of an n-type SiGe, the prior art fails to teach or suggest that the first region also has a layer which is free of germanium or that the imager has a third region of the semiconductor material located below the second region, where the third region is a first conductivity type, and has a layer that includes silicon germanium and a layer that is free of germanium; and has a fourth region of the semiconductor material located below the third region, where the fourth region of semiconductor material contacts the third region and is of a second conductivity type.

#### *Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Stein whose telephone number is 572-272-1544. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m. If the attempts to reach the examiner are unsuccessful, the examiner's supervisor, Deborah Jones can be reached by dialing 571-272-1535. The official fax number is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 13, 2004



Stephen J. Stein  
Primary Examiner  
Art Unit 1775